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C0275 PPNAC1, A MAIN REGULATOR OF PHENYLALANINE BIOSYNTHESIS IN P. PINASTER ()

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1 Resumen

The metabolism of phenylalanine plays a central role in the channeling of carbon from photosynthesis to the biosynthesis of phenylpropanoids during wood formation. This crucial pathway is finely regulated primarily at the transcriptional level by MYB and NAC transcription factors. In Arabidopsis, poplar and eucalyptus, the transcriptional network controlling secondary cell wall involves NAC-domain regulators operating upstream Myb transcription factors, but in conifers functional evidence had only been obtained for MYBs. We showed that PpMYB8 is a regulator of phenylpropanoid metabolism and lignin synthesis genes (Craven-Bartle et al. 2013) and three NAC genes *PpNAC1*, *PpNAC30* and *PpNAC31* were associated to vascular development in maritime pine (Pascual et al. 2015). Of all of them, *PpNAC1* is expressed in the secondary xylem and compression wood of adult trees and phylogenetic analysis classified PpNAC1 as potential candidates to be involved in a transcriptional regulatory network controlling phenylalanine metabolism in maritime pine. This NAC transcription factor has been thoroughly characterized and its role upstream the transcriptional network involving Myb TFs will be discussed. Understanding the molecular switches controlling wood formation is of paramount importance for fundamental tree biology and has important implications in tree biotechnology.

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References:

Craven-Bartle B, et al. (2013). *Plant J*, 74: 755-766.

Pascual MB, et al. (2015). *BMC Plant Biol*, 15: 254.